Working with a Thomson Grass Valley K2 Media Server

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Working with a K2 Media Server Overview

Avid Interplay Transfer supports ingest and send to playback of SD and HD media using the FTP protocol to and from a Grass Valley™ K2 media server.

A complete end-to-end workflow for Long GOP XDCAM HD assets is available using either an Avid AirSpeed Multi Stream device, an Omneon, or a Grass Valley K2 media server. Long GOP XDCAM HD media is ingested and available for editing using an Avid editing application, and then you use Send to Playback to send the OP1a file to a supported device for playback. The MPEG stream is XDCAM compliant.

This document covers the workflow for the Grass Valley K2 media server. It also covers SD media.

During an ingest operation, OP1A MXF streams are sent using FTP to the Interplay Transfer engine from a K2™ server. The stream is read and parsed by appropriate Interplay Transfer's Generic FTP modules and then stored in an Avid Unity ISIS shared storage environment.

During a send to playback operation, the media is read from Avid Unity ISIS shared storage environment and multiplex into OP1A MXF streams, that are sent to a specified target playback device or server using FTP.

Important Information

Before you add a K2 media server in your workgroup environment, you need to consider some important information provided in these sections:

- "Information About FTP Server Profiles" on page 3
- "Information About Send to Playback" on page 3
- "Information About Ingesting" on page 4
- "K2 Audio Tracks Ingest Limitations" on page 4
- "K2 User Accounts and Folder Permissions" on page 5

Information About FTP Server Profiles

The FTP server profile configurations vary depending on whether it is used for ingesting or send to playback and with SD (IMX) or HD (Long GOP) media formats. Typically, one FTP profile is created for a K2 ingest and one or several FTP profiles are created for send to playback to a target K2 server. By creating separate FTP profiles for ingest and playback you avoid accidentally overwriting existing media on the K2 server.

For better performance, Avid recommends using the K2's high performance network connection. When creating a FTP Server Profile use <*K2 server host name*>_he0 for the Server Name, whereas, <*K2 server host name*>_he0 is the designated Gigabit Ethernet Jumbo network NIC address for the K2 server.

<K2 server host name>_he0 is the K2 Media Server's FTP and streaming network IP address, not the K2 Media Client's IP address. Do not use the K2 Control NIC for FTP transfer, ingest or sent to playback, because it is typically of lower bandwidth and used mainly for K2 metadata control purpose. For more information, see "Streaming video between K2 systems" in the Thomson Grass Valley "K2 Media Client System Guide.

Information About Send to Playback

Before using Send to Playback to transfer items to a K2 media server, from an Avid editing application, make sure the following conditions are met to prevent a transfer failure:

- The receiving target FTP directory on the K2 server must be configured and the privileges set to support accepting incoming OP1A MXF media stream.
- The Send to Playback Tape ID must be alphanumeric characters. The maximum length of a name is 32 characters with no intervening spaces and no dots "." characters.

The FTP directory must be a K2 clip bin created by the K2 server's APPCenter GUI. You can not use a directory created by a direct FTP mkdir command. For more information, see the "Administering and Maintaining the K2 System" chapter in the Thomson Grass Valley "K2 Media Client System Guide."

Information About Ingesting

When ingesting live media from a K2 media server and the target media is also being recorded or transferred from another K2 media server, the K2 media server delays any data being transferred by 20 seconds. This delay is set by the K2 media server policy. Therefore, you should let enough media material accumulate before attempting to use Avid's FTP Media Browser to engage any ingest.

When performing a Generic FTP ingest, the audio is limited to 8 tracks and PCM-based only. Dolby E is not supported.

When a K2 media server is simultaneously performing several activities, such as captures, ingests, and transfers, the K2 FTP might become unresponsive when the FTP Media Browser attempts to read the MXF header bytes from a K2 source MXF file. The K2 FTP capabilities are limited to 4 ongoing FTP streams. You might see an error message such as "Cannot read requested bytes" due to this condition.

When creating FTP Server Profiles for Send to Playback and Ingest make sure the Default Directory text box contains different locations for the playback and ingest media to avoid accidentally overwriting the media.

The setup and configuration for working with Long GOP XDCAM HD assets with a K2 media server are similar to the procedures described in the "Configuring Capture and Playback of MXF DHM OP1a File Formats" in the *Avid Interplay Transfer Setup and User's Guide*.

K2 Audio Tracks Ingest Limitations

When you are ingesting MXF audio tracks into an Avid workgroup environment using Avid Generic FTP ingest, each non-mono channel tracks are first demuxed into its constituent sequential mono channel tracks. Only the first 8 sequential mono-channel tracks are later ingested as OpAtom audio files. If tracks are already mono-channel in nature, they are ingested as it is, subject to the 8 track limit.

Original tracks in mono-channel are directly ingested with 8 tracks, the defined track limit.

Any non-PCM tracks must be wrapped as a pseudo-PCM MXF track to be ingested, because non-PCM-based material is not supported. All the MXF audio essence tracks are expected to have the same channel counts per track. For example, mono-channel, bi-channel, etc. Per track, mixed channel count across MXF audio tracks is not supported.

After ingesting non-PCM audio tracks, do not edit or mixdown any of the non-PCM audio tracks, because this leads to destruction and non-recoverable audio tracks.

For example:

- An Op1A MXF file contains 1 video track, with 8 mono-channel PCM (16 bits or 24 bits) tracks at 48kHz.

  Ingest results: All 8 mono-channel PCM audio tracks are ingested.

- An Op1A MXF file contains 1 video track, with 16 mono-channel PCM (16 bits or 24 bits) tracks at 48kHz.

  Ingest results: Only the first sequential 8 mono-channel PCM audio tracks are ingested. The rest of the tracks are ignored.

- An Op1A MXF file contains 1 video track, with 4 mono-channel PCM (16 bits or 24 bits) tracks at 48kHz and 2 Dolby-E pairs wrapped as pseudo-PCM (for a total of equivalent of 8 mono-channel tracks).

  Ingest results: All 8 mono-channel tracks are ingested, with the first 4 tracks as mono-channel PCM and the last 4 tracks as pseudo-PCM tracks.

- An Op1A MXF file contains 1 video track, with 8 mono-channel PCM (16 bits or 24 bits) tracks at 48kHz and 4 Dolby-E pairs (for a total of equivalent of 16 mono-channel tracks).

  Ingest results: Only the first sequential 8 mono-channels PCM are ingested and the last 8 pseudo-PCM tracks are ignored.

K2 User Accounts and Folder Permissions

Before you can ingest or use Send to Playback with a K2 media server you need to create a user account on the K2 media server and set the correct permissions on the ingest and playback folders. For complete details, see the Thomson Grass Valley documentation.

The K2 media server provides two user accounts:

- **mfxmovie**—used with MXF format files.

  When you use this account, you can create any folder structure on the K2 media server that meets your needs.

- **movie**—used with GXF format files. Avid does not support the GXF format, therefore do not use the movie user account.

You can also choose to use any name you want when creating a user account on the K2 server. However, you must create top level folders with the name MXF to identify that the files in the MXF folder are MXF format. These folders must have the correct permissions to allow the transfers to complete.

When creating a user account using any name, you must create the following folders:

- <*drive*>:/MXF/<*send to playback*>

  Set the user permission for the *send to playback* folder to allow read and write.

- <*drive*>:/MXF/<*ingest*>

  Set the user permission for the *ingest* folder to allow read only.

Supported XDCAM Long GOP Formats with K2 Media Server

This table lists the K2 media server Playback Formats available when setting up a FTP Server profile using Server Type: OP1A_EXPORT_K2.

H	V	Interlaced or Progressive	Frame Rate	MPEG Profile and Level	Bit Rate		Sub-sample	Sony Product
1920	1080	Interlaced	59.94	422P@HL	50	CBR	4.2.2	XDCAM HD Phase III
1920	1080	Interlaced	50	422P@HL	50	CBR	4.2.2	XDCAM HD Phase III
1280	720	Progressive	59.94	MP@HL	35	VBR	4.2.0	XDCAM EX
1280	720	Progressive	59.94	422P@HL	50	CBR	4.2.2	XDCAM HD Phase III
1280	720	Progressive	50	422P@HL	50	CBR	4.2.2	XDCAM HD Phase III
1280	720	Progressive	50	MP@HL	35	VBR	4.2.0	XDCAM EX

Check List for K2 Media Server Setup

When adding a K2 media server to your workgroup for ingesting or send to playback, you need to setup the K2 media server.

Task		Description
❑	Read the important information section before adding a K2 media server to your workgroup.	See "Important Information" on page 2.
❑	Make sure you have the correct version of the K2 media server.	For the Interplay Transfer v1.6.1 release, the K2 version is v3.2.74.1031. For information about version numbers that might have changed after this document was release, see the Interplay ReadMe.
❑	Setup user accounts on the K2 media server.	See "K2 User Accounts and Folder Permissions" on page 5.
❑	Create an ingest and a send to playback folder on the K2 media server.	See "K2 User Accounts and Folder Permissions" on page 5.

Check List for Adding a K2 Server for Ingest

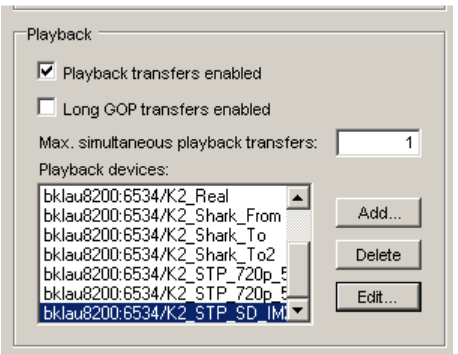
When adding a K2 server to your workgroup for ingesting media, you need to configure the Interplay Transfer settings and create a FTP server profile.

Task		Description
❑	Read the important information section before adding a K2 media server to your workgroup.	See "Important Information" on page 2.
❑	Setup the K2 media server.	See "Check List for K2 Media Server Setup" on page 7.
❑	Create a FTP server profile for the K2 server and the type of media you want to ingest.	See "Configuring an FTP Server Profile for Ingest From a K2 Server" on page 14.
❑	In the Interplay Transfer Engine Configuration Tool, add the K2 server to the Ingest list.	See "Adding a FTP Server Profile for Ingesting" on page 17.

Check List for Adding a K2 Server for Playback

When adding a K2 server to your workgroup for using Send to Playback, you need to configure the Interplay Transfer settings and create a FTP server profile.

SD Op1A MXF are generated by Generic FTP DHM modules. The HD Long GOP MXF are generated by the Avid editing application's DET modules. The Op1A MXF are transferred to a target K2 server differently. Therefore, they are configured differently as specified below.

Task	Description
❑ Read the important information section before adding a K2 media server to your workgroup.	See "Important Information" on page 2.
❑ Setup the K2 media server.	See "Check List for K2 Media Server Setup" on page 7.
❑ Create a FTP server profile for the K2 server and the type of media you want to playback.	See "Configuring an FTP Server Profile for Playback to K2 Server" on page 9.
❑ In the Avid Interplay Transfer Engine Configuration Tool, in the Playback area, select Playback transfers enabled. *Do not select Long GOP transfers enabled, because this option is only used with the Avid MediaStream server.*	
❑ SD IMX media only—In the Avid Interplay Transfer Engine Configuration Tool, add the K2 server to the Playback list. *For HD XDCAM Long GOP formats it is not necessary to add the K2 server to the Playback list as this happens automatically when setting up a profile for HD formats.*	See "Adding a FTP Server Profile for Send to Playback of SD Media" on page 13.
❑ HD XDCAM Long GOP only—In the Avid Interplay Transfer Engine Configuration Tool, in the Dynamically Extensible Transfers (DET) area, select DET enabled.	

Configuring an FTP Server Profile for Playback to K2 Server

When adding a K2 server to your workgroup environment, you need to create an FTP server profile for the K2 server's FTP parameters. The profile settings vary depending on whether you are working with SD (IMX) media or HD (XDCAM Long GOP) media. With HD media you can create separate profiles for each format that you want to use with a Send to Playback.

After you create a profile of the FTP parameters for the FTP server, you cannot edit the Profile Name, Default Directory, or FTP Mode settings. If you need to change these settings, you need to create a new profile for the FTP server.

To create a K2 server profile for using Send to Playback:

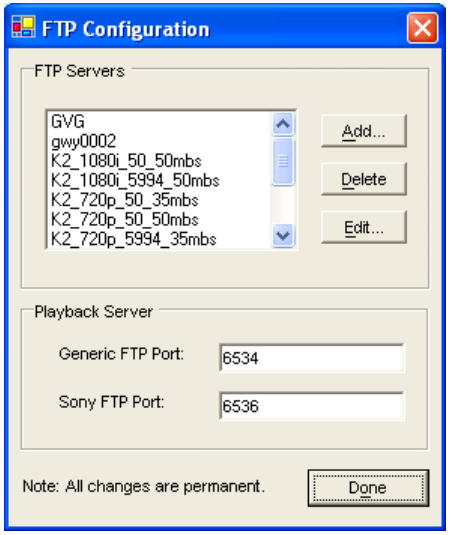
1. On your Interplay Transfer server, click the Start button, and select All Programs > Avid > Avid Interplay Transfer Engine Configuration.

   The Avid Interplay Transfer Engine Configuration dialog box opens.

2. Click the Configure FTP Parameters button.

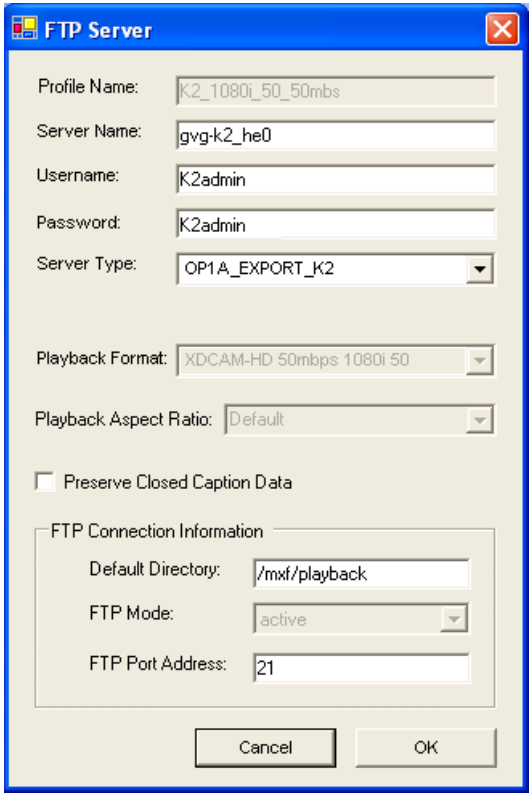
   The FTP Configuration dialog box opens.

If the Configure FTP Parameters button is not available, "Interplay Transfer Engine with Supplemental FTP Services" was not selected as the installation type when the Interplay Transfer Engine application was installed. You need to reinstall the Avid Interplay Transfer Engine software.



3. Click Add.

   The FTP Server dialog box opens.



4. Enter the setup information for the K2 server and type of media.
   - See “Settings for FTP Server Profile for Playback of HD (XDCAM Long GOP) Media” on page 11.
   - See “Settings for FTP Server Profile for K2 Server Playback of SD Media” on page 12.
5. Click OK to close the FTP Server dialog box.
6. On the FTP Configure dialog box, in the Playback Server area, type the port number in the Generic FTP Port text box.

   Avid recommends using 6534.
7. Click Done.

Settings for FTP Server Profile for Playback of HD (XDCAM Long GOP) Media

When adding a profile for using send to playback of HD (XDCAM Long GOP) media to a K2 media server, select the options in the FTP Server dialog box as follows:

FTP Server dialog box

Option	Description of settings for playback of HD media
Profile Name	Type a name for this profile. Don't include spaces. *The name you assign to the profile appears in the Send to Playback list.*
Server Name	Type the name of the K2 media server. You must use the high performance network interface: *<K2 server host name>*_he0.
Username	Type the K2 media server user name to connect to the K2 media server.
Password	Type the K2 media server password to connect to the K2 media server.
Server Type	For playback of HD (Long GOP) media, select OP1A_EXPORT_K2.
Playback Format	(Playback only) Select the playback format for playback of XDCAM HD Long GOP material to a K2 media server. The format must be supported by the target K2 server and must match the target resolution specified and supported by the Avid editing application. For a list of supported resolutions, see "Supported XDCAM Long GOP Formats with K2 Media Server" on page 6.
Preserve Closed Caption Data	This option only applies when Server Type is set to MEDIA_STREAM_PROFILE and with the MPEG-2 Long GOP SD 25 Mbps format.
FTP Connection Information	
Default Directory	Type the name of the folder on the K2 media server where you want the Send to Playback to put the files.
FTP Mode	Displays the FTP mode as active.
FTP Port Address	Type the FTP connection port. The default is 21.

Settings for FTP Server Profile for K2 Server Playback of SD Media

When adding a profile for using send to playback of SD media to a K2 media server, select the options in the FTP Server dialog box as follows:

FTP Server dialog box

Option	Description of settings for playback of SD media
Profile Name	Type a name for this profile. Don't include spaces. *The name you assign to the profile appears in the Send to Playback list.*
Server Name	Type the name of the K2 media server. You must use the high performance network interface: <*K2 server host name*>_he0.
Username	Type the K2 media server user name to connect to the K2 media server.
Password	Type the K2 media server password to connect to the K2 media server.
Server Type	For playback of SD media, select GENERIC_FTP_PROFILE.
Playback Format	(For playback only) This option only applies when Server Type is set to OP1a_Export_K2 and with HD (Long GOP) media.
Preserve Closed Caption Data	This option only applies when Server Type is set to MEDIA_STREAM_PROFILE and with the MPEG-2 Long GOP SD 25 Mbps format.
FTP Connection Information	
Default Directory	Type the name of the folder on the K2 media server where you want the Send to Playback to put the files.
FTP Mode	Displays the FTP mode as active.
FTP Port Address	Type the FTP connection port. The default is 21.

Adding a FTP Server Profile for Send to Playback of SD Media

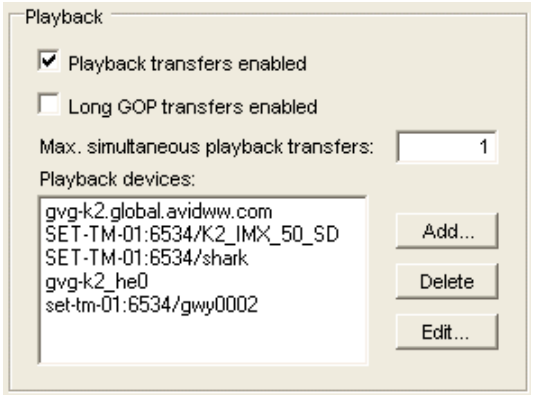
When configuring a K2 media server into your workgroup environment for sent to playback of SD media, you need to add the FTP Server profile to the list of Playback devices in the Interplay Transfer Engine Configuration Tool.

To add a SD playback FTP Server profile to the Interplay Transfer Engine Configuration Tool:

1. On the Interplay Transfer server, click the Start button, and then select All Programs > Avid > Avid Interplay Transfer Engine Configuration.

   The Avid Interplay Transfer Engine Configuration dialog box opens.

2. In the Playback area, click Add.



   The Playback Device dialog box opens.

For HD XDCAM Long GOP formats it is not necessary to add the K2 server to the Playback list as this happens automatically when setting up a profile for HD formats.

3. Type the name of the FTP Server profile associated with the K2 media server.

   Adding a GENERIC_FTP_PROFILE playback profile uses the format below:

   <TM Engine host name>:< Generic FTP Playback service port>/< Playback Profile >

4. Click OK.

Configuring an FTP Server Profile for Ingest From a K2 Server

When adding a K2 server to your workgroup environment, you need to create an FTP server profile for the K2 server's FTP parameters. This section describes the ingest setup.

After you create a profile of the FTP parameters for the FTP server, you cannot edit the Profile Name, Default Directory, or FTP Mode settings. If you need to change these settings, you need to create a new profile for the FTP server.

To create a K2 server profile for ingesting media:

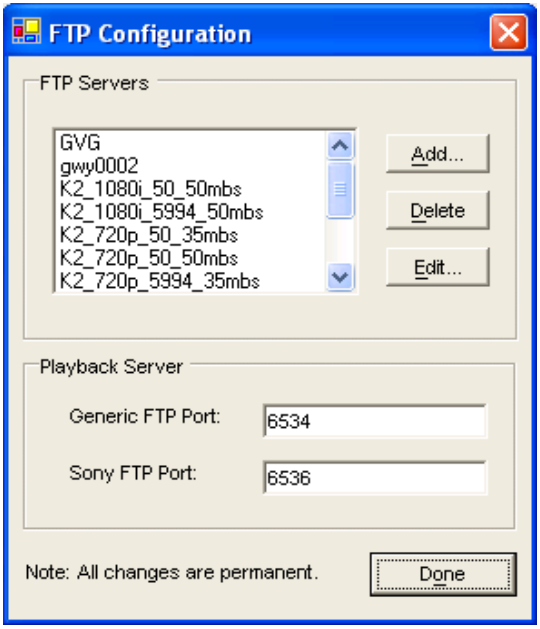
1. On your Interplay Transfer server, click the Start button, and select All Programs > Avid > Avid Interplay Transfer Engine Configuration.

   The Avid Interplay Transfer Engine Configuration dialog box opens.

2. Click the Configure FTP Parameters button.

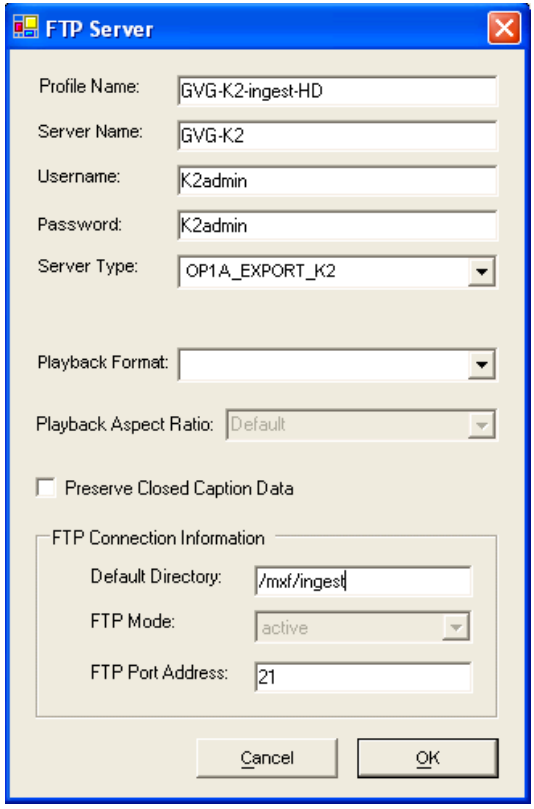
   The FTP Configure dialog box opens.

If the Configure FTP Parameters button is not available, "Interplay Transfer Engine with Supplemental FTP Services" was not selected as the installation type when the Interplay Transfer Engine application was installed. You need to reinstall the Avid Interplay Transfer Engine software.



3. Click Add.

   The FTP Server dialog box opens.



4. Enter the setup information for the K2 server and type of media for ingesting.
   - See "Settings for FTP Profile for Ingest of SD and HD (XDCAM Long GOP) Media" on page 16.
5. Click OK to close the FTP Server dialog box.
6. On the FTP Configure dialog box, type the port number in the Generic FTP Port text box.

   Avid recommends using 6534.
7. Click Done.

Settings for FTP Profile for Ingest of SD and HD (XDCAM Long GOP) Media

When adding a profile for using ingest of SD or HD (XDCAM Long GOP) media from a K2 media server, select the options in the FTP Server dialog box as follows:

FTP Server dialog box

Option	Description of settings for ingest of SD and HD media
Profile Name	Type a name for this profile. Don't include spaces. *The name you assign to the profile appears in the FTP Media Browser list.*
Server Name	Type the name of the K2 media server. You must use the high performance network interface: <*K2 server host name*>_he0.
Username	Type the K2 media server user name to connect to the K2 media server.
Password	Type the K2 media server password to connect to the K2 media server.
Server Type	Select OP1A_EXPORT_K2.
Playback Format	(For playback only) This option only applies when Server Type is set to OP1a_Export_K2 and with HD (Long GOP) media.
Preserve Closed Caption Data	This option only applies when Server Type is set to MEDIA_STREAM_PROFILE and with the MPEG-2 Long GOP SD 25 Mbps format.
FTP Connection Information	
Default Directory	Type the name of the folder on the K2 media server where the files to ingest are located.
FTP Mode	Displays the FTP mode as active.
FTP Port Address	Type the FTP connection port. The default is 21.

Adding a FTP Server Profile for Ingesting

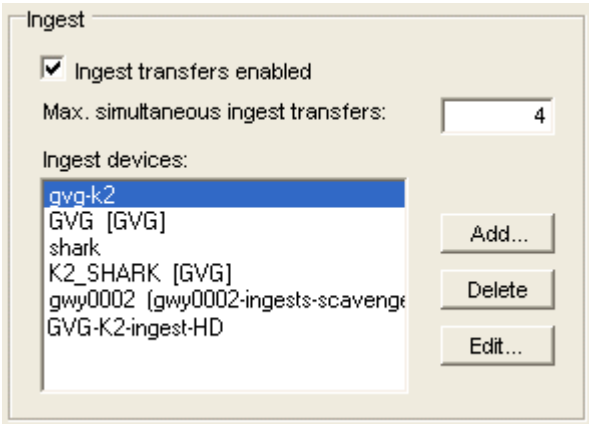
When configuring a K2 media server into your workgroup environment for ingesting, you need to add the FTP Server profile to the list of Ingest devices in the Interplay Transfer Engine Configuration Tool. This makes the profile available to the Interplay Transfer clients.

To add an ingest FTP Server profile to the Interplay Transfer Engine configuration:

1. On the Interplay Transfer server, click the Start button, and then select All Programs > Avid > Avid Interplay Transfer Engine Configuration.

   The Avid Interplay Transfer Engine Configuration dialog box opens.

2. In the Ingest area, click Add.



   The Ingest Device dialog box opens.

3. Type the name of the FTP Server profile associated with the K2 media server.
4. Click OK.

Configuring an Avid Interplay Transfer Client

Before you can transfer to or from an Avid editing application you need to configure the Avid Interplay Transfer client. The following sections cover the various settings.

- "Creating and Editing FTP Directory Profiles on Interplay Transfer Client" on page 18
- "FTP Directory Profile Settings For Ingesting From K2 Media Server" on page 21
- "Configuring the Avid Editing Application Transfer Settings" on page 22

Creating and Editing FTP Directory Profiles on Interplay Transfer Client

When a workgroup includes an FTP server, you need to create FTP directory profiles on the Interplay Transfer client that allows the FTP server to connect with the Avid editing system. The FTP Directory Profile must contain the same connection information as the Avid Interplay Transfer Engine Configuration settings.

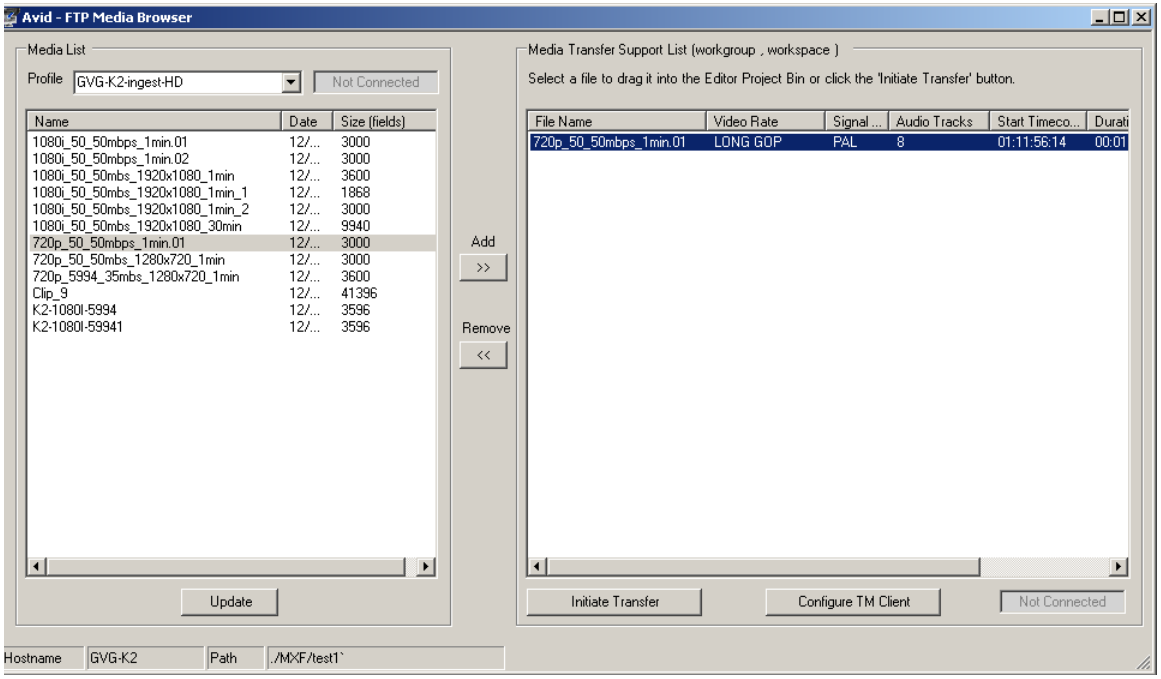
The Avid FTP Media Browser application is used for ingest from FTP servers.

To create and edit FTP directory profiles:

1. From the Avid editing system, click the Start button, and then select All Programs > Avid > Utilities > Avid FTP Media Browser.

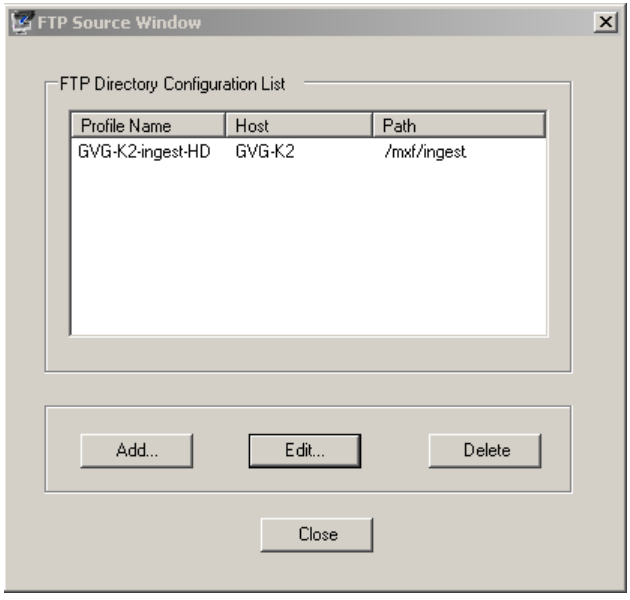
   The Avid - FTP Media Browser application opens.

When K2 media displays in the Avid - FTP Media Browser window the file extension .mxf does not display in the list. Also the Size column uses fields instead of MB.



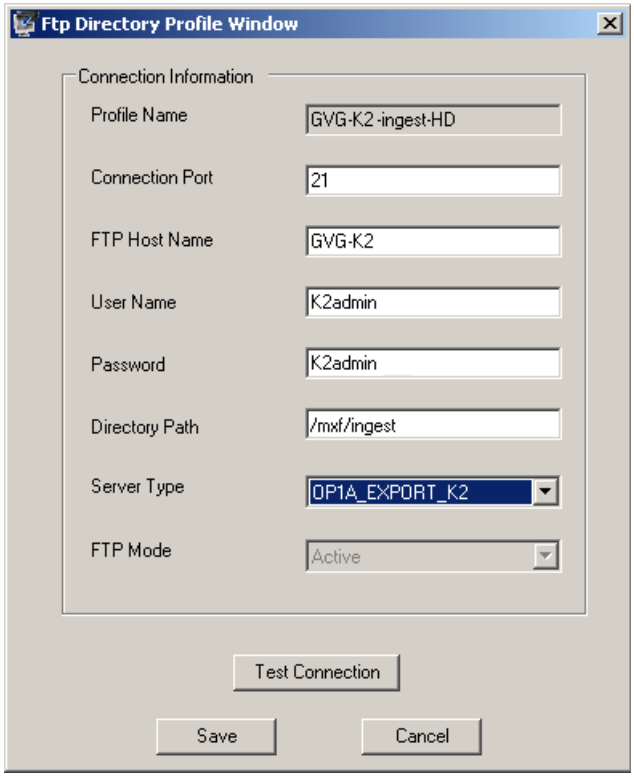
2. Right-click the Profile menu and click Open Profile Window.

   The FTP Source Window opens, providing a list of FTP directory profiles.



3. Do one of the following:
   - Click Add to add a new profile.
   - Select a Profile Name and click Edit to edit an existing profile.

   The FTP Directory Profile Window opens.



4. Type the configuration information for the FTP server, making sure your entries match the FTP server's network settings.

   See "FTP Directory Profile Settings For Ingesting From K2 Media Server" on page 21.

5. (Option) Click Test Connection if you want to verify that the connection to the FTP directory is working.
6. Click Save.

FTP Directory Profile Settings For Ingesting From K2 Media Server

When a workgroup includes an K2 media server, you need to create an FTP directory profile that lets the K2 media server connect with the Avid editing system.

For a procedure on creating or editing an FTP Directory profile, see "Creating and Editing FTP Directory Profiles on Interplay Transfer Client" on page 18.

For more information about the FTP Directory Profile Window Settings dialog box, see the *Avid Interplay Transfer Setup and User's Guide*.

Your entries must match the K2 media server's network settings.

The following table describes the settings used when creating or editing FTP Directory Profiles on an Interplay Transfer client.

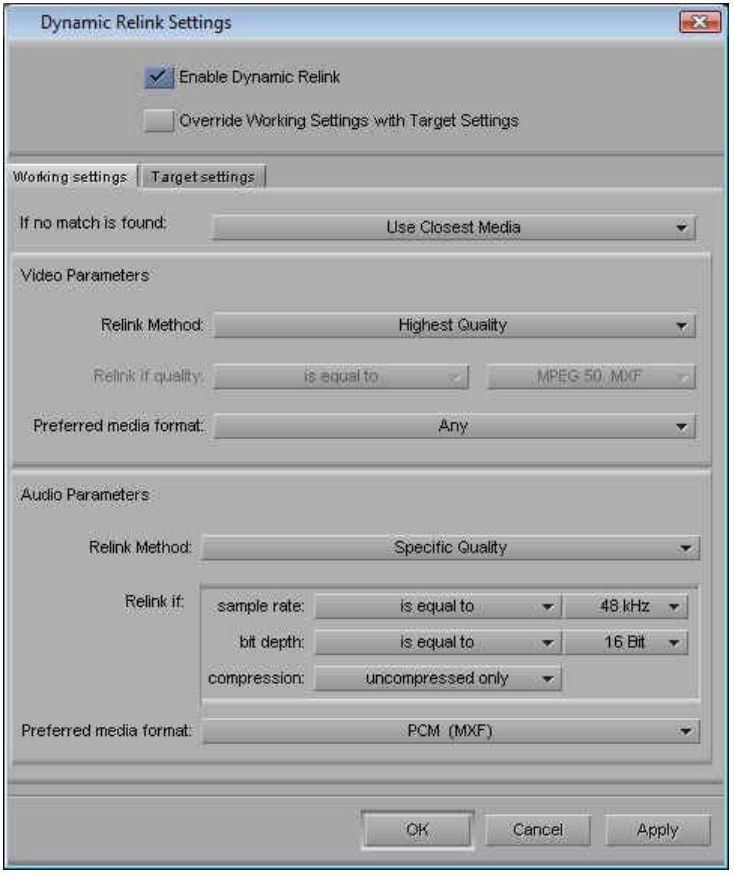
FTP Directory Profile Window Settings for K2 Media Server

Option	Description
Profile Name	Name of this profile. A unique profile name is used for each directory.
Connection Port	Displays the port number used by the K2 media server (not the playback port).
FTP Host Name	Type the name of the K2 media server. This FTP Host Name must match the Server Name assigned during the configuration of the FTP parameter in the Avid Interplay Transfer Engine. See "Configuring an FTP Server Profile for Ingest From a K2 Server" on page 14.
User Name	Type the K2 media server user name to connect to the K2 media server.
Password	Type the K2 media server password to connect to the K2 media server.
Directory Path	Type the name of the folder on the K2 media server where the files to ingest are located.
Server Type	Select OP1A_EXPORT_K2.
FTP Mode	Displays the FTP mode as Active.

Configuring the Avid Editing Application Transfer Settings

Configure the Avid editing application settings as follows before capturing or playing back XDCAM HD Long GOP media:

- Select “Direct channel output” in the Avid editing application Transfer Settings dialog box.
- Select options in the Avid editing application Dynamic Relink Settings dialog box as shown in the following illustration.



If You Need Help

If you are having trouble using your Avid product:

7. Retry the action, carefully following the instructions given for that task in this guide. It is especially important to check each step of your workflow.
8. Check the latest information that might have become available after the documentation was published:
   - If the latest information for your Avid product is provided as printed release notes, they ship with your application and are also available online.

     If the latest information for your Avid product is provided as a ReadMe file, it is supplied on your Avid installation CD or DVD as a PDF document (README_*product*.pdf) and is also available online.

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